
Brickellia jimenezii (Asteraceae, Eupatorieae), a New Species from Guerrero, Mexico

Oscar Hinojosa Espinosa and Ramiro Cruz Durán

Departamento de Biología Comparada, Facultad de Ciencias, Universidad Nacional Autónoma de México, Apartado Postal 70-399, Delegación Coyoacán 04510, México, D.F., México.
oapostat@yahoo.com.mx

ABSTRACT. The new species *Brickellia jimenezii* Hinojosa & Cruz Durán (Asteraceae, Eupatorieae) is described from Guerrero, Mexico. It belongs to the *Barroetia* A. Gray complex within *Brickellia* Elliot, and is similar to *B. subuligera* (Schauer) B. L. Turner. The new species presents heads with more florets ([45 to]74 to 106 vs. 30 to 50 in *B. subuligera*), larger style branches and anthers (to 3.7 mm and 2.1 mm, respectively, vs. to 2 mm and to 1.3 mm, respectively, in *B. subuligera*), as well as cypselae with four well-defined ribs on each face (vs. none or two on the exterior face and none or one on the interior face in *B. subuligera*). A key to this species complex and an illustration of the new species are provided.

RESUMEN. Se describe la especie nueva *Brickellia jimenezii* Hinojosa & Cruz Durán (Asteraceae, Eupatorieae) proveniente del estado de Guerrero, México. Esta especie pertenece al complejo *Barroetia* A. Gray de *Brickellia* Elliot, y está más emparentada con *B. subuligera* (Schauer) B. L. Turner. La especie nueva presenta cabezuelas con más flores ([45 a]74 a 106 vs. 30 a 50 en *B. subuligera*), ramas del estilo y anteras más grandes (hasta 3.7 mm y 2.1 mm, respectivamente, vs. hasta 2 mm y 1.3 mm, respectivamente, en *B. subuligera*), así como cipselas con cuatro costillas bien definidas en cada lado (vs. ninguna o dos en el lado exterior y ninguna o una en el interior en *B. subuligera*). Se proporcionan una clave para este complejo de especies y una ilustración de la especie nueva.

Key words: Asteraceae, Balsas Basin, *Barroetia*, *Brickellia*, Eupatorieae, Guerrero, IUCN Red List, Mexico.

The large genus *Brickellia* Elliot contains about 90 species, most restricted to the western United States, Mexico, and Central America; 78 of these are native to Mexico (King & Robinson, 1987; Turner, 1997). The genus is characterized by its graduate involucre, tubular corollas with small lobes, styles with enlarged basal nodes, cypselae with eight to 10 ribs, pappus bristles with flattened outer surfaces, and a base

chromosome number of $x = 9$ (King & Robinson, 1987; Turner, 1997).

Within *Brickellia*, a group of five Mexican species (*B. laxiflora* (Brandege) B. L. Turner, *B. pavonii* (A. Gray) B. L. Turner, *B. problematica* B. L. Turner, *B. sonora* B. L. Turner, and *B. subuligera* (Schauer) B. L. Turner) are referred to as the *Barroetia* complex. This complex is characterized and differs from typical *Brickellia* by its herbaceous habit with tap roots, serrate leaves with apices and marginal teeth having cuspidate tips (but callose in *B. problematica*), and tangentially compressed cypselae with four to six ribs. Formerly, this group of species (except *B. sonora*) had been recognized as the genus *Barroetia* A. Gray; however, Turner (1991a) transferred the species to *Brickellia*, and later on, he described *Brickellia sonora* as a new member of the *Barroetia* complex (Turner, 1991b).

During taxonomic treatment of the Asteraceae for the municipality of Copalillo, located at the Balsas Basin in Guerrero, Mexico, several distinctive collections of the *Barroetia* complex of *Brickellia* were found. These differ from all the known species of the complex in having larger heads with up to 106 flowers and cypselae with four ribs on each face, and thus it is postulated to be a new species.

Brickellia jimenezii Hinojosa & Cruz Durán, sp. nov. TYPE: Mexico. Guerrero: Mpio. Copalillo, 3.12 km al E de Papalutla, 18°1'4.8"N, 98°52'52"O, 3 nov. 2007 (fl., fr.), Oscar Hinojosa Espinosa 308 (holotype, FCME; isotypes, MEXU, MO). Figure 1.

Haec species *Brickelliae subuligerae* (Schauer) B. L. Turner similis, sed ab ea floribus in quoque capitulo numerosioribus, styli ramis sicut antheris longioribus et cypselae pagina externa internaque 4-costata differt.

Annual *herbs* with tap roots, erect, 0.18–0.8 m high; *stems* terete, branched above, puberulent, brown to reddish purple. *Leaves* opposite and decussate (the upper branches with alternate, linear-lanceolate bracts), simple, at least the lower petiolate; blades

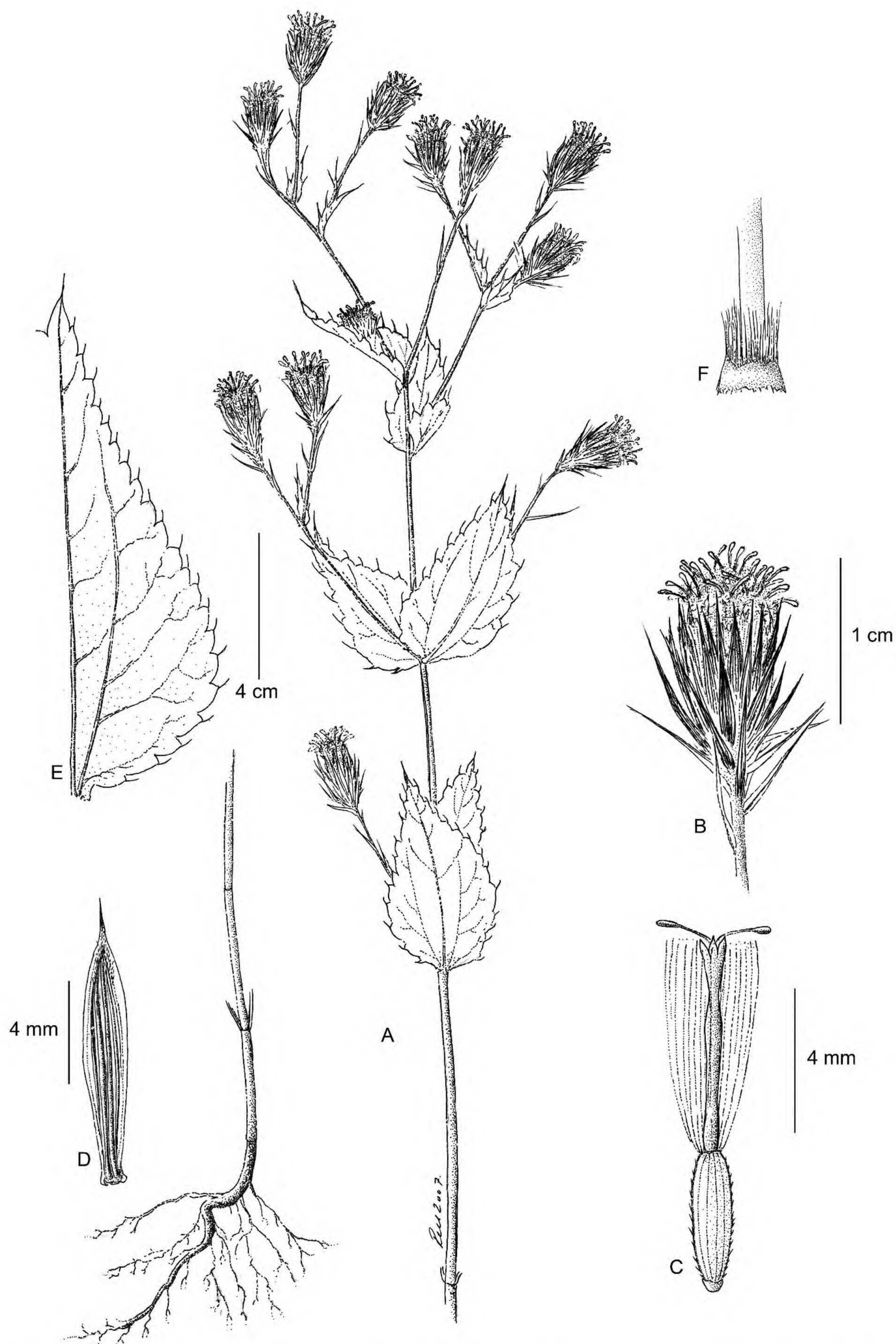


Figure 1. *Brickellia jimenezii* Hinojosa & Cruz Durán. —A. Flowering plant. —B. Head. —C. Floret. —D. Phyllary. —E. Leaf. —F. Stylar base. Drawn from the holotype *Hinojosa 308* (FCME).

1.2–4.5 × 0.9–2.5 cm, ovate, apices acute-cuspidate, margins serrate, the teeth with cuspidate tips, bases cuneate, puberulent to hirsute, abaxial surface resinous-dotted, trinervate; petioles 0–15 mm, sparse-

ly to densely puberulent to pubescent. *Heads* discoid, homogamous, clustered in paniculate inflorescences; the ultimate peduncles terete to slightly sulcate, pubescent, 0.3–20 mm; *involucre* cylindric to cam-

panulate, 11–13 mm, the phyllaries linear-lanceolate to lanceolate, acuminate to cuspidate, with hyaline margins, adaxially with white-cream transverse ribs, resinous-dotted, pubescent, graduate in 4 to 6(to 7) series, the inner series wider than the exterior; *receptacle* plane, naked, glabrous, 2–3.5 mm wide. *Florets* (45 to)74 to 106 per head, hermaphrodite and fertile, 4–7 mm, cream to greenish cream; corolla tubular, the tube cylindric, often slightly constricted near the base, throat narrowly funnelform, with 5 ovate lobes, 0.4–0.5 mm, shortly papillose on abaxial and adaxial surfaces; *anthers* 5, 0.9–1.5(–2.1) mm, including the oblong, hyaline, apical appendages; *style branches* clavate, (3–)3.4–3.7 mm, with obtuse apices, base of the styles with pubescent nodes. *Cypselae* oblanceolate-oblong, 3.5–4.5 mm, tangentially compressed, with 10 hirsutulous ribs, 4 on each face and 1 on each side, basally with a cream carpodium, 0.25–0.3 mm; *pappus* of 18 to 20 white capillary bristles, 5–7 mm, with flattened outer faces, their margins antrorsely barbed.

Distribution, ecology, and phenology. *Brickellia jimenezii* occurs in roadside ravines of tropical deciduous forest with *Aegopogon* Humb. & Bonpl. ex Willd. (Poaceae), *Acacia* Mill. (Fabaceae), *Boerhavia diffusa* L. (Nyctaginaceae), *Desmodium* Desv., *Lysiloma divaricatum* (Jacq.) J. F. Macbr., *Otopappus epaleaceus* Hemsl., *Pseudosmodium perniciosum* (Kunth) Engl. (Anacardiaceae), and *Tecoma stans* (L.) Juss. ex Kunth (Bignoniaceae). The type locality is characterized by a warm and dry climate and tawny, rocky limestone soil at an altitude of ca. 910 m. At the time of the type collection in November, the population was apparently scarce, with the individuals seen presenting flowers and fruits, but most of their leaves were dry, especially the lower ones. By December, the plants were completely dry, presenting only fruits. Two additional herbarium specimens reveal that *B. jimenezii* presents fresher vegetative structures in September and October.

IUCN Red List category. *Brickellia jimenezii* is tentatively considered Vulnerable (VU D1+2) according to IUCN Red List criteria (IUCN, 2001), due to its population size estimated at less than 500 mature individuals and its known distribution from only three localities with a distributional area of less than 100 km².

Etymology. The species epithet honors Jaime Jiménez Ramírez, a taxonomist who invited the first author to participate as a scholar in the project “Estudio florístico de la porción guerrerense de la Cuenca del río Balsas,” working with the family Asteraceae.

Relationships. *Brickellia jimenezii* belongs to the *Barroetea* complex within *Brickellia* because it has the characteristics of the species of this complex: herbaceous habit with tap roots, serrate leaves with apices and marginal teeth having cuspidate tips, and tangentially compressed cypselae. However, the new species differs from the other species of the *Barroetea* complex in having cypselae with four ribs on each face (vs. four to six ribs), heads with more florets ([45 to]74 to 106), and larger style branches ([3–]3.4–3.7 mm) and anthers (0.9–1.5[–2.1] mm).

Brickellia jimenezii is sympatric with only two species of the *Barroetea* complex: *B. pavonii* and *B. subuligera* (Turner, 1991b). According to the taxonomic treatments of McVaugh (1984) and Turner (1991b, 1997), and our personal observations, the new species is superficially similar to *B. subuligera*, a species with petiolate leaves, but with only 30 to 50 florets per head, style branches 1.5–2 mm long, anthers 1.3 mm or shorter (including apical appendages), and cypselae with zero to two ribs on the exterior face and zero to one rib on the interior face. *Brickellia jimenezii* is similar in size to *B. pavonii*, but the latter differs from the former by its sessile leaves, heads with only 25 to 30 florets, and cypselae with three or two ribs on the exterior face and one on the interior face.

KEY TO SPECIES OF THE *BARROETEA* COMPLEX OF *BRICKELLIA**

- 1a. Stems and leaves with glandular trichomes; leaf apices and marginal denticulations callose *B. problematica*
- 1b. Stems and leaves without glandular trichomes; leaf apices and marginal denticulations cuspidate.
 - 2a. Heads with (45 to)74 to 106 florets; cypselae with 4 well-defined ribs on each face *B. jimenezii*
 - 2b. Heads with 15 to 50 florets; cypselae with 0 to 2(3) ribs on the exterior face and 0 or 1 on the interior one.
 - 3a. Leaves all sessile or with petioles up to 3 mm long *B. pavonii*
 - 3b. Leaves evidently petiolate, at least the basal ones.
 - 4a. Peduncles mostly 2–6(–7) cm long; Sonora and Sinaloa *B. sonorana*
 - 4b. Peduncles 0–2 cm long; widespread in Mexico, but not in Sonora or Sinaloa.
 - 5a. Ultimate peduncles 1–5 mm long; florets 15 to 27 per head; central Veracruz, southern Puebla, and northern Oaxaca *B. laxiflora*
 - 5b. Ultimate peduncles 5–10 mm long; florets 30 to 50 per head; Chihuahua and Coahuila to central Guerrero, but not in Puebla *B. subuligera*

* Modified from Turner (1991b).

Paratypes. MEXICO. **Guerrero:** Mpio. Copalillo, 3.12 km al E de Papalutla, 1 dic. 2007 (fr.), *Hinojosa* 322, 323, 324 (FCME); 2.5 km al NO de Papalutla, rumbo a Atenango del Río, 14 oct. 1992 (fl., fr.), *Ortiz* 154 (FCME); 3 km al SO de Zicapa, 4 oct. 1981 (fl., fr.), *Lozada* 52-ML (FCME, MEXU).

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